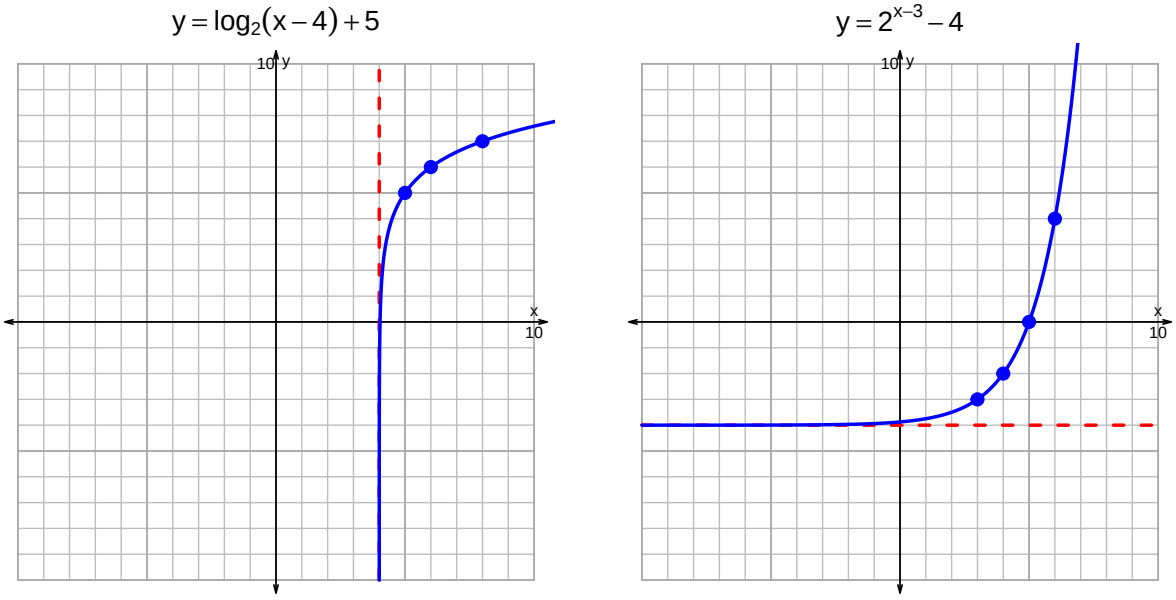
Name: Date:

s18quiz: EXP LOG (Solution v129)

1. Graph $y = \log_2(x-4)+5$ and $y = 2^{x-3}-4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-11 = \left(\frac{-5}{4}\right) \cdot 2^{3t/7}$$

Divide both sides by $\frac{-5}{4}$.

$$\frac{11 \cdot 4}{5} = 2^{3t/7}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{11 \cdot 4}{5}\right) = \frac{3t}{7}$$

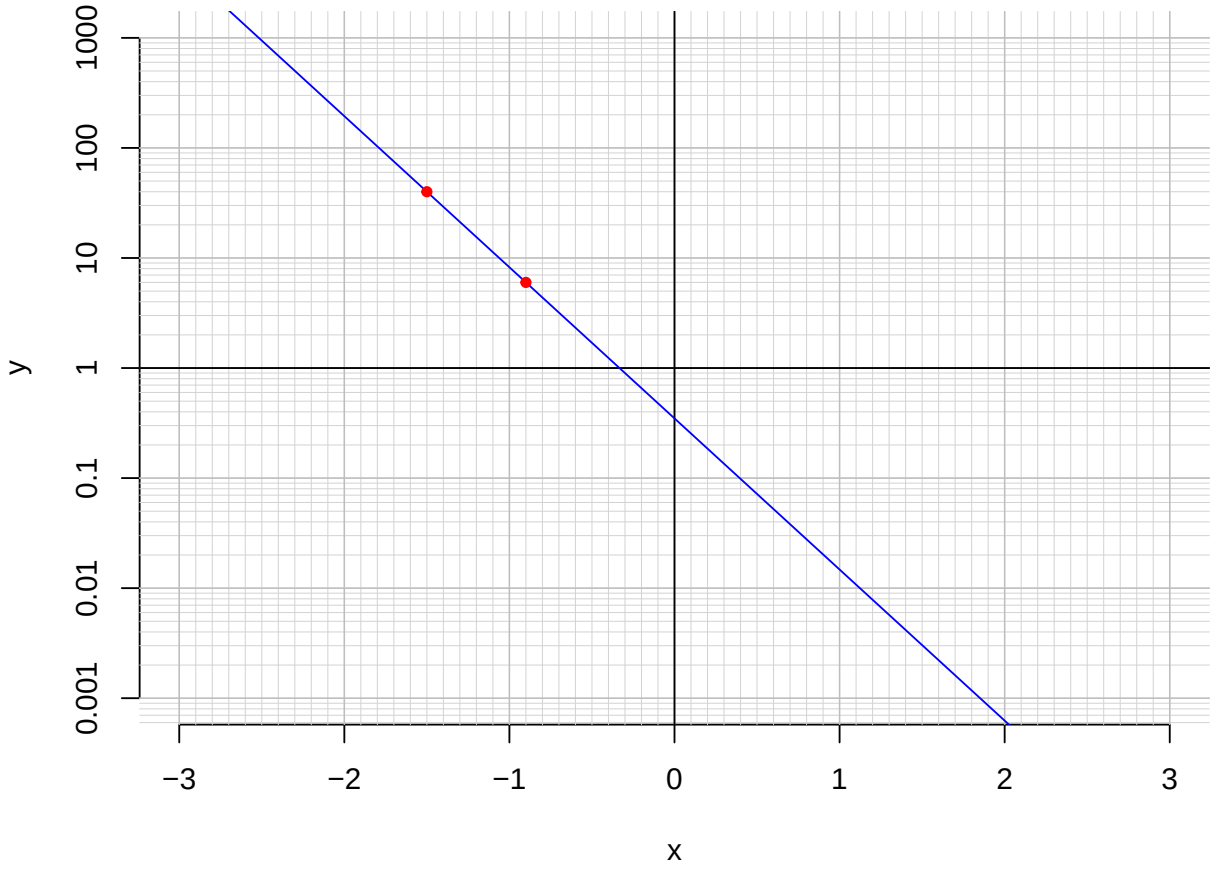
Divide both sides by $\frac{3}{7}$.

$$\frac{7}{3} \cdot \log_2\left(\frac{11 \cdot 4}{5}\right) = t$$

Switch sides.

$$t = \frac{7}{3} \cdot \log_2\left(\frac{11 \cdot 4}{5}\right)$$

3. An exponential function $f(x) = 0.349 \cdot e^{-3.16x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-0.9)$.

$$f(-0.9) = 6$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{3.16} \cdot \ln\left(\frac{x}{0.349}\right)$$

c. Using the plot above, evaluate $f^{-1}(40)$.

$$f^{-1}(40) = -1.5$$